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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/986,743

11/09/2001

Shunpei Yamazaki

740756-2378

6006

31780

7590

01/25/2005

ERIC ROBINSON

PMB 955

21010 SOUTHBANK ST.

POTOMAC FALLS, VA 20165

EXAMINER

GHYKA, ALEXANDER G

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,743

Applicant(s)

YAMAZAKI ET AL.

Examiner

Alexander G. Ghyska

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-109 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5, 10-14, 19-26, 31-47, 51-63, 68-80, 84-96 and 100-109 is/are allowed.
- 6) ☒ Claim(s) 6-9, 15-18, 27-30, 48-50, 64-67, 81-83 and 97-99 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

ALEXANDER GHYKA
PRIMARY EXAMINER

AV 2812
Alex Ghyska

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-9, 15-18, 27-30, 48-50, 64-67, 81-83 and 97-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al (US 5,817,550) in view of Yamazaki et al (US 5,891,766).

Carey et al disclose the steps in the formation of a TFT, of depositing an amorphous silicon film on an insulating substrate, irradiating with a laser beam to crystallize the film, and patterning to form islands. See column 3, lines 15-30 and 54-57, and column 5, lines 27-35 and 38-41. The laser may be a solid state laser such as Nd:YAG (column 6, lines 52-58). Carey et al discloses that the insulation layer on which the film is formed may be nitride (column 4, lines 15-20). Moreover, Carey discloses that the amorphous silicon is deposited by PECVD. See column 3, lines 50-54.

Therefore, Carey et al disclose all of the presently claimed limitations except the second and fourth harmonic of the YAG laser.

Yamazaki et al disclose a MIS semiconductor device and a method of its fabrication. Yamazaki et al disclose the equivalence of Nd:YAG lasers (1064 nm) and its second, third and fourth harmonics. See column 4, lines 40-50.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have used the laser disclosed by Yamazaki et al in the process taught by Carey et al, because Carey et al disclose that a YAG laser may be used, and Yamazaki et al disclose the equivalence of the YAG laser and its second and fourth harmonics. In view of the equivalence of the YAG laser and its second and fourth harmonics as disclosed by Yamazaki et al, the use of the second and fourth harmonics laser in the process of Carey et al is *prima facie* obvious. Moreover, with respect to the limitation

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regarding the absence of air, the disclosure of Carey et al that the deposition of the amorphous silicon is deposited by PECVD, would have made it obvious to one of ordinary skill in the art that the silicon layer is deposited in a PECVD apparatus in a controlled environment so as to control the reactants and avoid impurities and contaminants. Therefore, a *prima facie* case of obviousness is established.

Allowable Subject Matter

Claims 1-5, 10-14, 19-26, 31-47, 51-63, 68-80, 84-96 and 100-109 are allowed.

The following is an examiner's statement of reasons for allowance: None of the references or combinations thereof disclose or suggest an irradiation area of the continuous wave laser beam at the semiconductor film has an oval shape having an aspect ratio of 10 or more, or irradiating the semiconductor film with a continuous wave laser beam to crystallize the semiconductor film; forming a source region, a drain region, an LDD region, and a channel region in the semiconductor film; and irradiating the source region and the drain region with a laser beam of excimer laser, wherein the continuous wave laser beam is a second or fourth harmonic of a solid laser, as required by some of the independent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AGG
January 17, 2005

ALEXANDER GHYKA
PRIMARY EXAMINER

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